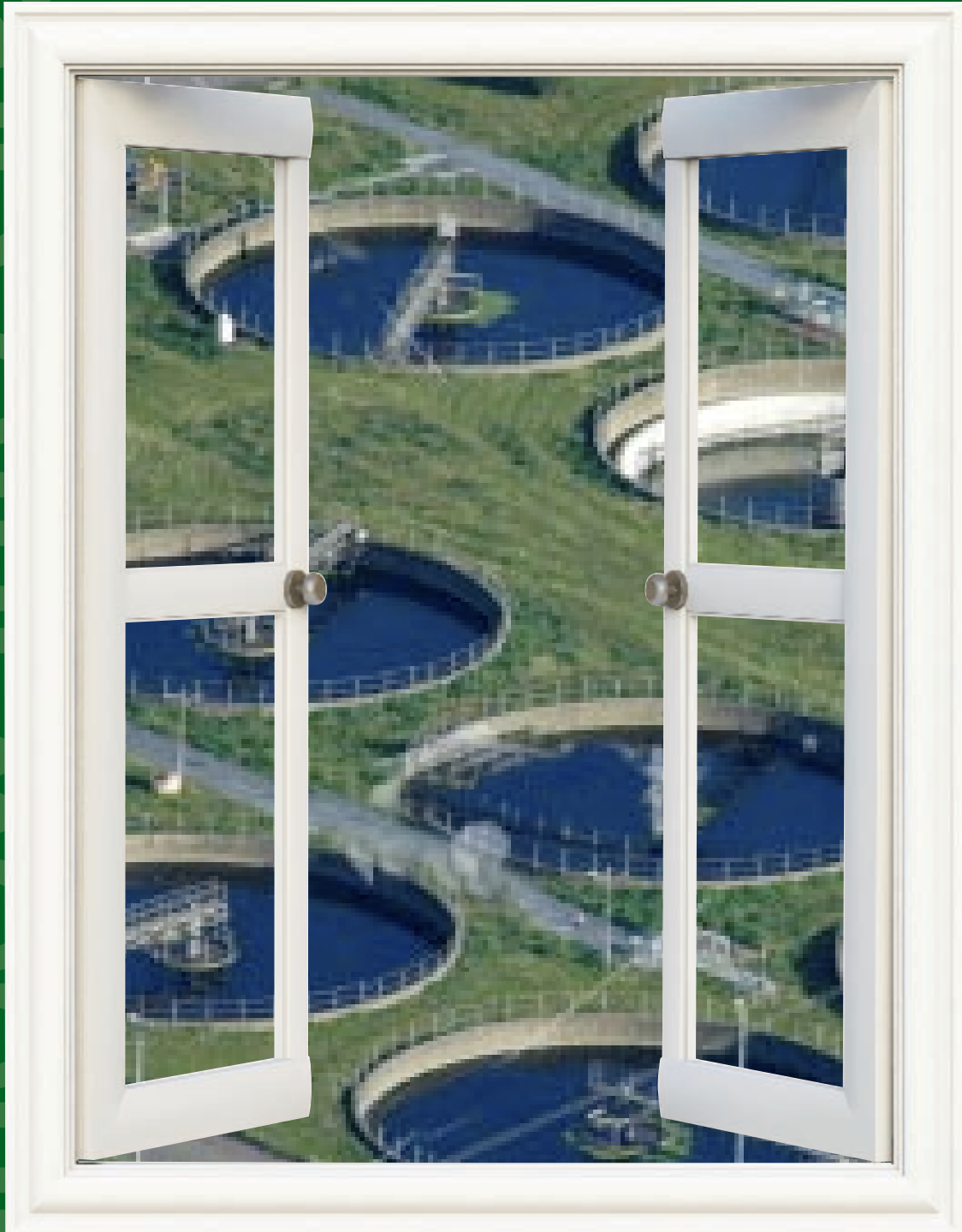


XII. Case Studies



XII. Case Studies

12.1 Introduction

When you hear the term environmental management, you might think of planting trees, monitoring endangered species or measuring water quality. But did you know environmental management also includes managing people and what we do?

By itself the environment will operate on natural cycles which regulate ecosystems and provide the right conditions for living things. People alter the food web, the water cycle, energy patterns, and nutrient cycles. Since all people consume resources, create waste, and have the power to alter these natural systems through our technology, we all need to manage our environmental impacts. Careful environmental management will sustain resources for us and our children, and into the future. We hope the following case studies will provide good information and hope for Virginia's future.

For additional information on sustainability, visit [Shades of Green](#). For other ideas on how you can reduce your environmental impacts, see the [25 Ways to Protect Virginia's Environment](#).

12.2 Case Studies

Virginia...Going Green: Corporate Case Studies in Conservation

The following examples highlight industry conservation practices. The following businesses and communities have been received the ***Governor's Environmental Excellence Award*** for their pollution prevention and conservation efforts. For more information, visit the Department of Environmental Quality's Office of Pollution Prevention.

Gold Medal Winner

Philip Morris USA – Park 500: Environmental Management System

By following the plan-do-check act environmental management system (EMS) process, the Philip Morris USA – Park 500 facility, located in Chester, has been able to significantly reduce its environmental impact. The EMS has been certified as meeting the ISO 14001 Standard, recognized by the Virginia Environmental Excellence Program at the E4 level, and accepted into EPA's Performance Track program. Results to date: **solid waste reduction** of one million pounds per month; **50% reduction in monthly steam use**; **40% reduction in electricity use**; and, **reduction of monthly water use** by 10 million gallons or 20%.

Silver Medal Winner

Anheuser-Busch – Williamsburg Brewery: Environmental and Energy Initiatives

Anheuser-Busch formed an "Environmental Ambassador Team" in 2008 with the objective of sharing the company's environmental stewardship successes and increasing awareness among not only employees but also within the community. The team participated in six community **litter clean-up events**, deployed an Environmental Stewardship display at six community events, and hosted six on-site employee awareness events. Also in 2008, the brewery **consolidated its energy conservation efforts** into an "Energy Conservation Steering Committee," whose initiatives resulted in **reductions in water use** of 17.5%, **electricity** 8.5%, fuel use 11.8%, CO2 13.3%, and unnecessary purchases 47.8%.

Bronze Medal Winner

Cargill Meat Solutions – Timberville Further Processing Plant: Environmental Management System

Implemented in 2007, the facility's environmental management system (EMS) is focused on keeping employees engaged, managing its environmental aspects/impacts, and developing environmental management programs to address significant aspects such as **energy**, **water**, greenhouse gases, **renewable energy** and **waste reduction**. The facility has been certified to the ISO 14001 Standard and has been accepted into the Virginia Environmental Excellence Program at the E4 level. Cargill Timberville's environmental policy is "PIC" – prevent pollution, improve continuously, and comply with all laws and regulations.

Environmental Program (Small Business)

Gold Medal Winner

The Sustainability Park, Chester, VA

Begun in 2006, The Sustainability Park, located in Chester, has built an infrastructure focusing on a "sustainability" model, attracting eight businesses including manufacturing, transportation, and **recycling**: a wood waste horse bedding/wood fuel pellet manufacturer, and a 500 ton/day **construction and demolition debris recycler**. Employment at the site has grown from zero in September 2006 to 80 by the summer of 2008. In 2007/2008, The Sustainability Park beneficially used tobacco by-products and a variety of woody biomass waste for compost product, ash and construction debris by-product material as structural fill, **reused water** from retention ponds, and managed clean wood waste for manufacturing boiler fuels and production of horse-bedding/commercial fuel pellets.

Environmental Program (Government)

Gold Medal Winner

City of Roanoke "Clean and Green" Campaign

In September, 2007, the City of Roanoke launched its "Clean and Green" campaign to improve environmental awareness and amplify citizen efforts towards **energy conservation**, greenhouse gas reduction, **waste management and recycling**. Since then, the City has worked with citizens, civic organizations, and businesses to enhance its **recycling program**, measure and reduce carbon emissions of businesses, increase public education of environmental issues, and develop outreach opportunities for citizens, schools, and businesses. As a result, **recycling tonnage has increased**, **energy consumption is steadily declining**, non-governmental entities are measuring carbon footprints, and more citizens are aware of how their behavior impacts the environment.

Gold Medal Winner

Town of Blacksburg: Environmental Management Program

Blacksburg's Environmental Management Program (EMP) is a comprehensive program initiated to educate employees and the community, promote awareness of the environment, affect changes that will improve the environment, and enhance and continually improve the environmental performance of government operations and the community at large. Goals are accomplished through partnerships with citizens, businesses, non-profit organizations, and Virginia Tech. The EMP is inclusive of a broad range of environmental objectives encompassing environmental policies, the environmental management system, pollution prevention, sustainability issues, and regulatory compliance for Town operations. Last year's focal areas included climate protection, **watershed management**, **urban forestry**, transportation, employee and citizen education, environmentally preferable purchasing, **waste minimization and recycling**, "Greening the Town code", and **adopting green building policies**.

Silver Medal Winner

U.S. Army Transportation Center, Fort Lee: Pollution Prevention Program

Goals of Fort Lee's pollution prevention program are to **decrease the highest volume waste streams** (used oil, contaminated fuel, lubricants and paints) and to **minimize sources of air and water pollution**. Fort Lee exceeds the Department of Defense goal of 40% diversion of all current **solid waste** and 50% diversion goal for **construction and demolition waste**. The central Virginia installation **recycles** 100% of used oil, contaminated fuel, and lubricants used at motorpools around the installation, including 17,000 gallons of contaminated fuel and 8,000 gallons of used antifreeze. Elimination of pollution sources for air and water is an ongoing effort. Projects such as installing over 30 aqueous parts washers across the installation to help eliminate solvent usage and **reduce air permitting** are examples of Fort Lee's commitment to preserving the environment.

Environmental Program (Not-For-Profit)

Gold Medal Winner

Lynnhaven River NOW

Lynnhaven River NOW, founded in 2002, is dedicated to protecting and substantially **improving water quality** in Virginia Beach's Lynnhaven River, a once legendary estuary then considered impaired and closed to shellfish harvest. To preserve and enhance the river's health, the organization works to **protect and restore valuable habitats** such as riparian buffers, wetlands and oyster reefs that filter polluted runoff, improve water quality for the river and its marine life, identify and **reduce the sources of nutrients, sediment, bacteria and chemicals entering the river**, raise citizen awareness of the river's problems, and engage the community in the restoration effort. Successful efforts to date include the "Save Oyster Shell" program in which local restaurants collect their oyster shells, which are later used for reef restoration, wetlands outreach in schools, **oyster gardening**, and **riparian buffer workshops**.

Silver Medal Winner

EarthCraft Virginia

EarthCraft Virginia, a **voluntary green building program** based in Richmond, provides a green building certification process for single family and multifamily projects and serves as a blueprint for healthy, comfortable homes that **reduce utility bills** and protect the environment. The organization works with builders to educate them on more advanced building science practices that result in **less waste** and greater efficiency, all with the goal of creating high performance homes. To date, EarthCraft has certified 200 single family houses and 13 multifamily projects.

Bronze Medal Winner

YMCA at Virginia Tech: Ytoss?

At the end of the school year, it is common to see university dumpsters overflowing. To **reduce this waste and recycle items**, the YMCA at Virginia Tech created the "Ytoss?" program with support from the University. Collection points are set up on campus and, with the help of over 100 volunteers, items are collected and stored over the summer to be sold to returning students and community members in the fall. It is estimated that in 2007 the program kept **74 tons worth of items out of the landfill** and saved the university \$4,000 in disposal fees.

Environmental Project (Large Business)

Gold Medal Winner

Philip Morris USA – Park 500 Facility: Park 500 Natural Treatment System

The Philip Morris USA – Park 500 facility, located in Chester, withdraws water from the James River, an estuary of the Chesapeake Bay, at a rate of approximately 1.8 million gallons per day. The plant's wastewater is sent through an on-site treatment plant before it is discharged back into the river. The treated water contains nutrients such as nitrogen and phosphorus. As part of the facility's efforts to reduce its environmental impact beyond its permitted levels, Park 500 identified an **innovative water treatment method** known as a **natural treatment system**, or **engineered wetlands**, that would further reduce the level of nutrients in the wastewater discharge from the facility. The natural treatment system (NTS) began operating in mid-2008. It is designed to reduce total nitrogen by 14% and total phosphorus by 34%. Preliminary data show that the NTS is far exceeding those levels. In addition to reducing nutrient discharges, the wetlands **provide over 60 acres of habitat; 70 new animal species have been identified in the area**. Park 500 also has developed a partnership with Virginia Commonwealth University for research and educational opportunities.

Silver Medal Winner

Canon Virginia Inc.: Cartridge Recycling Program

Industrial Resource Technology (IRT), a subsidiary of Canon Virginia located in Gloucester, is a **recycling facility for used toner cartridges**. Since its inception in 1996, IRT has recycled more than 100 million cartridges. In 2007, IRT implemented an innovative full-scope cartridge recycling operation that allows for the **harvesting of reusable aluminum, steel, and plastic parts**. The new system overcomes the hazard associated with handling combustible toner dust and eliminates the need for incineration. During the first year of operation, the system processed over ten million pounds of cartridges, **keeping them from being incinerated or landfilled**. The **recovered materials are either reused or recycled**. The recovered toner is sent to a cement manufacturer and burned in a kiln which fuels the manufacturing operations.

Bronze Medal Winner

Smithfield Packing Company – Portsmouth: Water Conservation Project

The Smithfield Packing Company's Portsmouth plant makes hotdogs, lunchmeat, and deli meats. In 2008, the facility's maintenance team was challenged to **cut water use** by 50% within a year. In the first three months, by implementing both standard and innovative technologies, the team achieved a 40% reduction, **saving an estimated 46.8 million gallons per year**. Cost savings include lowered water costs, a savings of \$300,000 for wastewater treatment, and a reclassification of the facility's pretreatment regulatory category.

Environmental Project (Small Business)

Gold Medal Winner

Dometic Corporation, Environmental Division: Idle Reduction Technology for Trucks

Dometic Corporation, Environmental Division, of Richmond develops and manufactures heating and cooling systems for marine and land-mobile applications worldwide. The company developed the **first commercially viable battery-powered HVAC technology for trucks, eliminating the need for a separate diesel generator to power the auxiliary HVAC system when the main engine is turned off**. The system, designed to run for ten hours or more between recharges, is estimated to reduce fuel costs by as much as \$9,500 per truck per year. In addition, idling trucks using the Dometic system **consume zero fuel and produce zero exhaust and noise emissions**.

Silver Medal Winner

Better Living Building Supply: Better Living Phase II (Troy, VA)

The 24,000 square foot Better Living Building Supply facility is the **first LEED for new construction registered project in Fluvanna County**. The facility uses a standard metal building technology typically used in industrial facilities, but with the added innovative technology of a **solar wall**. The southern wall of the building collects heat from the sun for use inside the facility; the traditional heating and cooling system is used only for supplemental heat. The facility, which has **water efficient fixtures**, also **collects rainwater** in an 80,000 gallon storage tank under the parking lot for use in the sprinkler system and for site irrigation. Other features include **no or low volatile organic chemical materials** inside the building, the use of a large percentage of **recycled materials**, and the **recycling of more than 75% of construction materials**.

Bronze Medal Winner

Hopewell Cogeneration: NOx Reduction on Startup

In 2006, the Hopewell Cogeneration Facility, which sells electrical power directly to Dominion Virginia and steam to a nearby manufacturing plant, changed its plant startup procedures to significantly **reduce its emissions of nitrogen oxides**, a precursor to ground level ozone and a green house gas. The first phase of the project **reduced NOx emissions** by about 16 tons or 5% per year, and the second phase increased that number to about 40 tons per year, saving the facility \$36,000 a year, or 10%.

Environmental Project (Government)

Gold Medal Winner

Virginia Department of Corrections: Pamunkey Farm Cooperative Venture Project

The Pamunkey Farm Cooperative Venture Project is a conservation and restoration project established on a **1,800 acre active ranch and farm** in Hanover County operated by the Virginia Department of Corrections. It is the largest and most **comprehensive project of its type for an active ranching and farming** operation in the Commonwealth and was accomplished through a unique partnership of 11 different entities, including local, state, and federal agencies, a non-profit and a university. It has significantly **improved water quality** through the **restoration of 10 acres of wetland**, **restoration of seven miles of streams and waterways**, **reclamation of five acres of eroded pastures** lands and pastures damaged during Hurricane Gaston, **establishment of 40 livestock grazing paddocks**, **doubling pasture utilization** and **increasing grazing capacity** by 50%, **development of nutrient management plans**, and **planting more than 2,500 trees and shrubs**.

Silver Medal Winner

Spotsylvania County: Massaponax Wastewater Treatment Facility

The Massaponax Wastewater Treatment facility, which came online in 2003 to replace an aging facility, treats eight million gallons per day from both municipal and industrial sources in Spotsylvania County. The facility, which discharges effluent directly to the Rappahannock River, has consistently outperformed engineering expectations, resulting in **decreased nutrient loadings to the river** of 50% for nitrogen and 90% for phosphorus. This efficiency has been achieved while **minimizing electrical**, chemical, and other operating costs through extensive process control testing and adjustments.